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DIRECTORATE OF
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Intelligence Memorandum

USSR: The World's Largest Steel Producer

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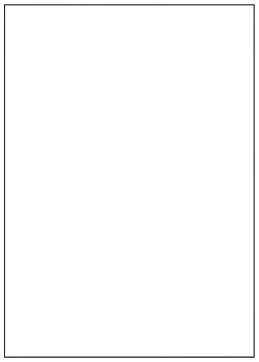

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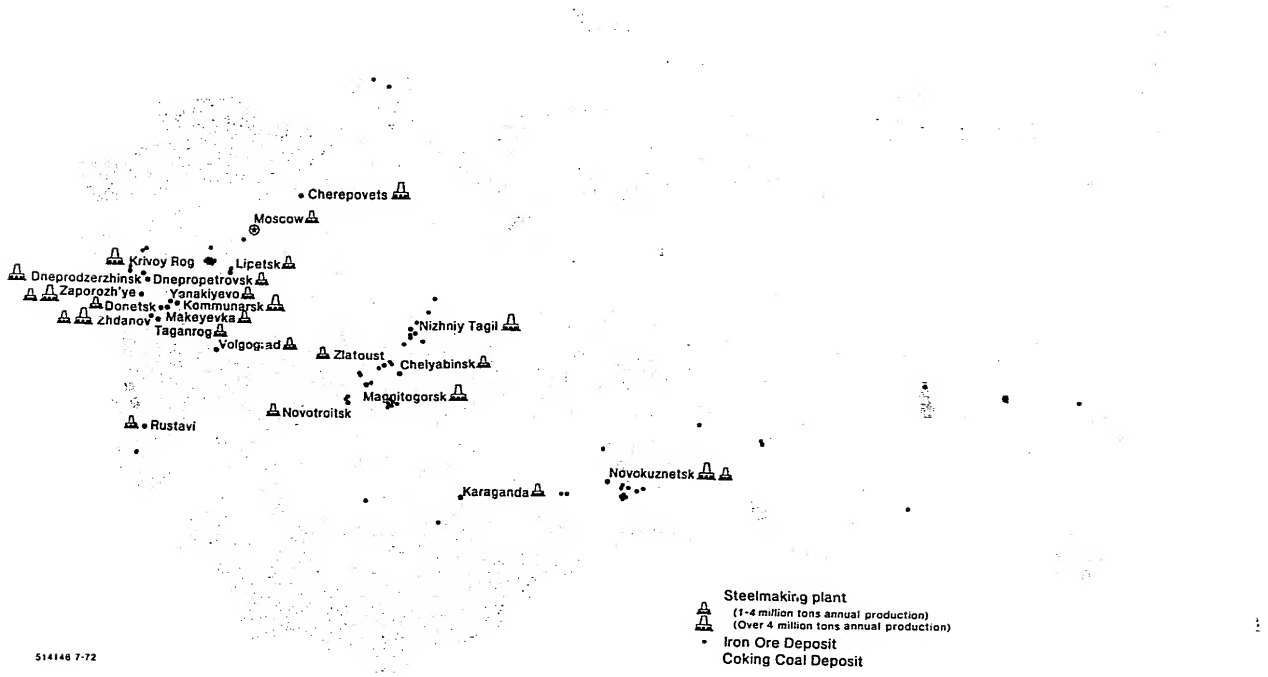


CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
July 1972

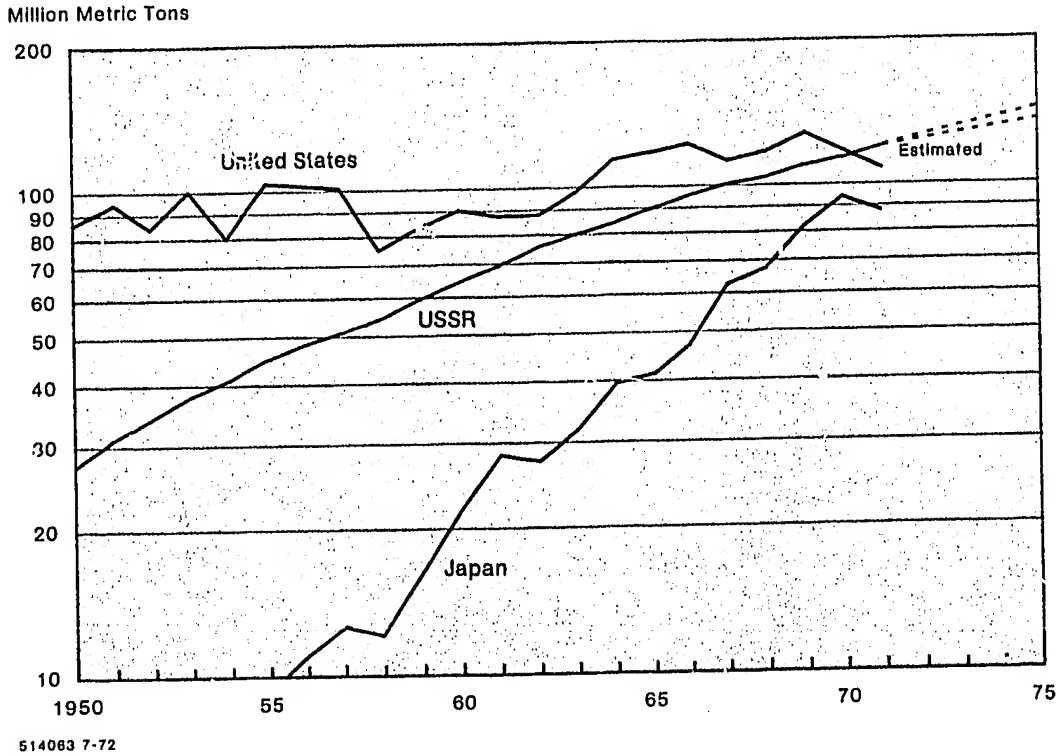
INTELLIGENCE MEMORANDUM

USSR: THE WORLD'S LARGEST STEEL PRODUCER

Summary and Conclusions

1. In 1971 the USSR had the world's largest production of steel, 121 million metric tons, surpassing US production of 109 million tons (see the chart). Soviet steel capacity, however, is only about three-fourths that

Growth in Output of Crude Steel



Note: This memorandum was prepared by the Office of Economic Research.

in the United States, and the Soviet steel industry suffers from chronic problems of lagging technology, high cost, and shortcomings in quality, finish, and assortment of products. With a gross national product (GNP) little more than one-half that of the United States and industrial production less than two-thirds the US level, the USSR consumes a proportionately much greater amount of steel. This is partly because of relatively large investment and defense demands, but probably also because of wasteful use of steel and lesser availability of substitute materials.

2. The level of technology in the Soviet steel industry is closest to world standards in blast furnaces and farthest behind in rolling and finishing. The USSR has been slow to adopt the oxygen converter process for crude steel and the continuous casting process for slabs and billets. The metallurgical equipment industry has fallen far short of planned deliveries of rolling and finishing equipment, both in quantity and in performance characteristics. These problems are likely to persist through the 1970s. Although the new five-year plan calls for a massive increase in investment in rolling and finishing, the equipment industry is not geared to meet these requirements.

3. Soviet costs of production seem to be roughly comparable to those in the United States and high relative to those in Japan and probably Western Europe. Labor costs are low but are offset by large expenditures on raw materials, capital equipment, and construction. Diminishing quality of iron ore and coking coal deposits and the development of new sources of raw materials, located east of the Urals and in the Far North, are major factors in raising costs. Capital costs per ton appear to be as high as in the United States and dramatically higher than in Japan, although the degree of automation and processing is much less.

4. The USSR is a net exporter of steel products -- 4.6 million tons in 1970. All but a small part of the exports go to Eastern Europe and less developed countries under bilateral trading arrangements. Because of strong domestic demand and cost disadvantages relative to the principal exporting nations, the USSR is unlikely in the next few years to become a major factor in Western markets for steel. The USSR will probably continue to be a net importer of finished products and pipe from the developed countries of the West. In addition, it may accelerate purchases of specialized rolling, finishing, and ore processing equipment from Western countries.

5. The USSR is likely to retain its leadership in world steel production during the 1970s. Soviet output of steel should increase at 5 million or 6 million tons per year and reach 140 million to 145 million tons in 1975 and 165 million to 170 million tons by 1980. Only a sustained recovery of demand for domestically produced steel would restore US

output to first place during the decade. After 1975, if not before, Japan should become a major competitor of both the United States and the USSR for world leadership in crude steel production.

Introduction

6. In 1971 the USSR, for the first time, surpassed the United States in the output of crude steel to become the world's largest steel producer. In spite of the high priority of catching up with the United States and the importance of steel, however, the event got only a brief mention in the Soviet press. The lack of fanfare probably reflects, in part, Soviet recognition that the United States, with its much larger steelmaking capacity, could regain the lead if there were a strong recovery in demand. In addition, Soviet leaders have become less preoccupied with the massive development of steel and other basic industries and more aware of the critical importance of advanced technology, particularly in the chemical, automotive, and computer industries.

7. The Soviet achievement was made possible primarily by a sharp decline in US production. More than that, the large tonnage of production in the USSR masks serious deficiencies in technology and assortment of output that raise costs and seriously reduce the utility of its steel output.

8. This memorandum reviews some major factors affecting the growth of the Soviet steel industry and evaluates prospects that the Soviet steelmaking industry will continue to lead in production and will improve the quality of its output mix.

Discussion

General

9. As a result of high priority in investment allocations, output of steel in the USSR has grown steadily for more than two decades. In 1971, Soviet crude steel output reached 121 million tons, compared with 109 million tons in the United States and 89 million tons in Japan (see the chart). Between 1950 and 1971, Soviet output increased by about 94 million tons, or more than Japan's increase over the same period and more than double the increase achieved by the US steel industry through its peak year in 1969. Year-to-year increases have been steady but not spectacular, averaging about 5 million tons in the 1960s (see Table 1). As Soviet industrial growth has slowed and the mix of production become more sophisticated, the rate of increase in steel output has steadily declined from 9% during 1951-60 to 6% during 1961-70 and 4% in 1971.

Table 1

USSR, US, and Japan:
Production of Crude Steel

Million Metric Tons

Year	USSR	US	Japan
1950	27.3	87.8	4.8
1951	31.4	95.4	6.5
1952	34.5	84.5	7.0
1953	38.1	101.2	7.7
1954	41.4	80.1	7.8
1955	45.3	106.2	9.4
1956	48.7	104.5	11.1
1957	51.2	102.2	12.6
1958	54.9	77.3	12.1
1959	60.0	84.8	16.6
1960	65.3	90.1	22.1
1961	70.8	88.9	28.3
1962	76.3	89.2	27.5
1963	80.2	99.1	31.5
1964	85.0	115.3	39.8
1965	91.0	119.3	41.2
1966	96.9	121.7	47.8
1967	102.2	115.4	62.2
1968	106.5	119.3	66.9
1969	110.3	128.2	82.2
1970	115.9	119.3	93.3
1971	120.9	109.1	88.6
1975			
Plan	146.4		
Estimated	140.0-145.0		

10. During the previous five-year plan (1966-70), substantial new capacities were completed, as follows: for the production of pig iron, 9.7 million tons (seven blast furnaces); for crude steel, 18.1 million tons (19 oxygen converters, four open hearth furnaces, and four electric arc furnaces); for finished steel, 14.3 million tons (15 rolling mills); for the production of pipe, 2.5 million tons (14 pipe rolling mills); and about 121 million tons of new capacity for the production of iron ore. On the other hand, there were large shortfalls below the new capacities planned

for this period. For example, iron ore fell short by 62 million tons, pig iron capacity by about 9 million tons, and crude steel and finished steel by about 11 million tons each.

11. The actual increase in output between 1965 and 1970 was 25 million tons, 8 million tons less than planned, but considerably more than the increase in new capacity. The additional output, beyond that from new capacity, was obtained by modernization of existing facilities. But failure to complete all of the planned new capacity necessitated the postponement of a substantial share of scheduled retirements of obsolete facilities which, as in the past, remained very small.

12. The shortfalls in new capacity reflected failure to complete investment programs in the industry on schedule. Difficulties arose from both construction lags and inadequate production of metallurgical equipment. Actual investment outlays of 10.2 billion rubles in ferrous metallurgy during 1966-70 were 27% below plan (see Table 2). In 1969 and 1970, investment fell below the level of 1968.

13. Growth problems are reflected also in the rising investment cost per ton (in terms of fixed prices) of additional output. During 1966-70, an average outlay of 410 rubles was needed for one ton of additional output (of crude steel) compared with 327 rubles in 1961-65 and only 167 rubles during 1951-55. Rising investment costs are explained mainly by (a) the construction of new steelmaking facilities in relatively underdeveloped Asiatic areas where construction and equipment delivery and installation costs exceed those in the European USSR by 5% to 10%, (b) the necessity to exploit poor-quality ores and develop new iron ore deposits in difficult terrain, (c) growing expenditures on specialized types of metallurgical equipment for better quality products, and (d) the annual tie-up of substantial amounts of investment funds in uncompleted construction. These trends can be expected to continue, and perhaps even intensify, and in the plan for 1971-75 the planned investment cost per additional ton of steel is 574 rubles.

14. Soviet investment costs in terms of dollars can only be very roughly estimated. On the basis of an overall average ruble/dollar price ratio for capital investment[1] and adjusting Soviet investment data for comparability with US and Japanese data,[2] a dollar cost per ton of

1. One ruble equals US $2, based on costs of comparable types of machinery and construction using 1968 rubles and 1970 dollars.
2. Soviet investment figures shown in Table 3 were reduced by about 40% to account for expenditures on ore mining and other support activities that are not included in US and Japanese data.

Table 2

USSR: Planned and Actual Investments in Ferrous Metallurgy

Period	Billion Rubles Planned	Billion Rubles Actual	Percent Fulfillment
1951-55	3.7	3.0	81
1956-60	a	5.2	–
1959-65	11.9	11.1	93
1961-65	–	8.4	–
1966-70	14.0[b]	10.2	73
1971-75	17.5	–	–

a. The Sixth Five-Year Plan (1956-60) was abandoned and replaced by a Seven-Year Plan (1959-65).
b. Revised downwards to 12.9 billion rubles in 1967.

additional output of between $500 and $700 is obtained.(3) The cost of the newest and largest integrated steel plant in Japan, the Nippon Kokon plant in Fukuyama, is around $116 per ton.(4) In the United States the latest large integrated plant, Bethlehem's Burns Harbor facility, cost $400 per ton of capacity.(5) Even if these calculations overstate Soviet investment costs in dollars, they clearly are high by Japanese and even US standards. Indeed, Soviet investment costs could be expected to be lower than in the United States and Japan because the degree of processing and automation is considerably less.

15. The location and quality of raw material supplies have raised both development and transportation costs. Although the USSR has the world's largest reserves of iron ore and extensive reserves of coking coal, the best quality reserves in the Western USSR are being depleted. A large ore body

3. These figures understate the cost of investment in new facilities. Investment in the modernization of old facilities, the source of a good part of the annual increases in Soviet production of steel, is generally cheaper than investment in new capacity.
4. Converted at the new central yen/dollar ratio of 308 yen to US $1. The yen/dollar ratio for producer durables would probably be somewhat lower, leading to a higher dollar value per ton of capacity.
5. Based on prices prevailing during 1964-69, when the plant was being constructed. At 1970 prices the cost per ton of such capacity would be somewhat higher.

is being developed at Kursk in the Western USSR. The ore, however, is very deep and the project is costly and behind schedule. Additional reserves are located east of the Urals (Kazakhstan and Eastern Siberia), and in the Far North (Pechora coal, and iron ore on the Kola Peninsula). The quality of iron ore has been steadily declining, and the construction of large beneficiation combines to upgrade the iron content of the ore has been erratic and often behind schedule. Similarily, the quality of coking coal has been declining and the timely construction of new cleaning and washing facilities has lagged. Nearly all Soviet coking coal has to be cleaned to reduce ash and sulfur content to acceptable levels.

16. In addition, growth in steel output has been affected by endemic lags in the construction of new steelmaking facilities. The duration of new plant construction in the Soviet steel industry is unusually long and has exceeded ten years in some cases. Currently, the value of uncompleted projects stands at a very high level – about 2.5 billion rubles. Finally, a major factor affecting growth in steel output is a lag in technology in crucial parts of the industry.

Technology

17. The USSR has a relatively modern steel industry, but the level of technology is not uniformly high in all sectors. Technology is most progressive in the processing stages that precede steelmaking proper – in the treatment of iron ore (beneficiation), the preparation of iron charges for the blast furnaces (sintering), and in the operation of blast furnaces. In the making and shaping of steel, however, such modern processes as oxygen converter and continuous casting are used far less extensively than in the United States and Japan. The Soviet steel industry is least advanced in the rolling and finishing sector. Specific technologies are discussed below.

Blast Furnaces

18. Soviet blast furnaces are among the largest in the world. The USSR has 17 blast furnaces with useful working volumes of 2,000 cubic meters or more, and a 3,000 cubic meter unit has recently been constructed at Novo Kuznetsk in Western Siberia. Only Japan has built larger furnaces, having seven of the ten largest in the world. Still larger furnaces with working volumes running as high as 5,000 cubic meters are planned for construction during the Ninth and Tenth Five-Year Plans (1971-80).

19. In Soviet practice, the iron charge for blast furnaces is, by and large, sintered.(6) The USSR produces more sinter than any other country,

6. The use of sinter (cinders), by permitting a freer circulation of air throughout the charge, because of its more uniform size, accelerates the transformation of the charge into molten pig iron. Sintering and pelletizing are the most commonly used processes for the agglomeration of iron ore.

and in 1970 the share of sinter in the total ore charge in Soviet blast furnaces stood at 86%. Largely for technical reasons, however, the USSR has been slow to adopt the newer and even more efficient pelletizing technology that has been developed and is gaining widespread use in the United States. In 1970 the USSR produced about 10 million tons of pellets, about 7% of total agglomerates, compared with about 44 million tons in the United States.

20. Operating efficiency of Soviet blast furnaces is maintained at a high level by the extensive use of high top operating pressures, high blast temperatures, oxygen injections into the blast, and efficient cooling and moisture control systems. The extensive use of natural gas keeps operating costs down by economizing on the use of relatively more expensive coke. In 1970 the coking rate (kilograms of coke used per ton of pig iron produced) was 574 kilograms per ton, substantially below the US figure of 673 kilograms per ton, but substantially higher than in Japan (474 kilograms per ton).

Oxygen Converters

21. The oxygen converter process,[7] developed by Austria in the 1950s, has rapidly gained acceptance in the major industrialized countries as a more efficient and less costly method of producing steel than the traditional open hearth process. Moreover, the process is compatible with continuous casting techniques.[8] The USSR has been slow to adopt this technology. Although in 1960 both the United States and the USSR produced about 2 million tons of steel by this method, in 1971 converter steel output in the United States had grown to 58 million tons (about 53% of production), compared with about 25 million tons (21% of production) in the USSR.

22. In the current plan period, oxygen converters will account for most of the increase in output of crude steel. Nevertheless, it is estimated that by 1975 oxygen converters will still account for only about one-third of crude steel output. Several factors explain the relatively slow spread of converter technology in the USSR. First, technical difficulties in the design and manufacture of equipment hampered the USSR in its early efforts to adopt the oxygen converter process. Problems also were encountered in

7. Oxygen converters, through the circulation of oxygen (rather than air) in the vessel, accelerate the removal of carbon and other impurities in the reduction of pig iron to steel.

8. Continuous casting machines cast crude steel directly into slabs, blooms, and billets, by-passing traditional blooming and slabbing mills. Oxygen converters and continuous casting machines can be combined with rolling mills to constitute an integrated, remarkably productive and efficient steelmaking technology.

building oxygen-generating installations to meet requirements for high-purity oxygen. The USSR purchased a complete oxygen converter plant from Austria in the mid-1960s, however, and is believed to have used the acquired equipment and technology to help overcome its technical difficulties. Second, funds probably are in short supply because of the heavy demands for investment resources by other sectors of the steel industry (for example, rolling and finishing). Third, the retirement of open hearth furnaces has been slow. During 1971-75, only the oldest open hearth shops are scheduled for retirement. Some open hearth furnaces are to be reconstructed to raise productivity.

Electric Furnaces

23. The USSR also has made relatively less use of the electric furnace steelmaking method than the United States and Japan. Currently, about 10% of Soviet production of steel is accounted for by the electric furnace process, compared with about 18% in the United States and Japan. In addition, the USSR has made less use of vacuum melting processes than the United States. However, the Soviets have made considerably greater use of the electroslag process, and they, and more recently US producers, consider it an efficient and economical alternative to conventional vacuum melting processes for the production of special high-quality steels. The USSR has been the world leader in the use of this process. Licenses for the refining of steel through the electroslag remelting process have been sold to Austria, France, Britain, Sweden, Japan, and the United States. Soviet capacity is estimated at about 400,000 tons per year, compared with about 70,000 tons per year in the United States.

Continuous Casting

24. In spite of early prominence in the development of continuous casting technology, the USSR has fallen behind the United States and Japan in the installation of capacity for continuous casting. Whereas, in 1968, installed capacity for continuous casting compared favorably with that of the United States – 9 million tons and 12 million tons, respectively – by 1971, capacity in the USSR had increased to only 11 million tons, compared with about 20 million tons in the United States. By 1975, Soviet installed capacity for continuous casting will approximate the current US level.

25. The Soviets have lagged in the construction of large continuous casting installations because of a reluctance to abandon conventional ingot casting and blooming and slabbing mills in the planning and construction of large steel plants. Continuous casting installations are located, for the most part, in smaller plants of the steel industry and consist mainly of small-scale units for the casting of blooms and billets. Only at the Novo

Lipetsk plant has a large slab-casting unit been constructed for use in conjunction with oxygen converters and a wide strip mill. The USSR also has lagged recently in undertaking construction of new wide strip mills, thereby cutting back the need for large slab-casters. Such units account for a major share of continuous casting capacity in the United States and Japan.

Rolling and Finishing

26. The USSR has been particularly slow in the development of special rolling and finishing facilities and equipment. It has been allocating a small but growing share of investments to the rolling and finishing sector to widen the assortment and improve the quality of steel products (see Table 3). That program suffered a serious setback during 1966-70 when only 0.8 billion rubles of a planned 1.6 billion rubles were actually spent on the acquisition of special finishing facilities for heat treatment, surface coating, and cold rolling. The shortfall stemmed from the inability of the metallurgical equipment industry to introduce and produce new types of equipment quickly and in adequate quantities. The last five-year plan counted on the delivery of high-speed computer-controlled rolling mills. This performance so far has been disappointing.

The USSR and Western Technology

27. Unlike Japan, which has followed a policy of importing all of the latest technological innovations in steelmaking and now has the most up-to-date steel industry in the world, the USSR has developed relatively independent of Western assistance. The two major imports in recent years have been a complete oxygen converter plant from Austria and equipment and technology for ore pelletizing from the United Kingdom. Other imports of equipment have included an electrolytic tinning line from the United Kingdom and several small rolling mills, including two Sendzimir mills,[9] from Italy. The Soviets have also expressed interest in purchasing other types of equipment from the United States and other Western suppliers, including facilities for the production of grain-oriented silicon (electrical) steel, strip processing lines, equipment for the production of stainless steel products, and heat-treatment facilities. Recently, the USSR has negotiated with several Western suppliers, including the United States, for additional deliveries of pelletizing equipment.

9. Small mills designed for precision rolling.

Table 3

USSR: Investment in Ferrous Metallurgy, by Sector

Percent

	1951-55	1956-60	1961-65	1966-70	Planned 1971-75
Metallurgical and coke-chemical	68.9	58.4	58.5	60.9	65.7
Of which:					
Pipe and tubes	9.4	6.9	6.9	8.0	10.0
Special processing[a]	3.6	4.5	7.0	7.6	15.0
Ore mining	20.6	32.1	29.9	26.0	22.0
Other[b]	10.5	9.5	11.6	13.1	12.3
Total	100.0	100.0	100.0	100.0	100.0

a. Facilities such as vacuum furnaces, cold rolling mills, annealing and other heat treatment lines, and tinning and galvanizing lines.
b. Including facilities for the production of ferroalloys, refractory materials, and metal specialties (nails, nuts, bolts, netting, and the like), and for the processing of scrap metal.

Soviet-US Comparisons

Capacity

28. The USSR normally seeks to operate its steelmaking facilities close to full capacity. In contrast, the US steel industry is affected by cyclical changes in demand and normally has a substantial portion of capacity in reserve to meet periods of peak demand. Steelmaking capacity in the USSR at the end of 1971 is estimated at about 130 million tons, or about three-fourths that of the United States, estimated at about 170 million tons. For organizational and technical reasons, full utilization of steelmaking facilities in the USSR is seldom achieved. Production lags are encountered in breaking in new equipment, and some equipment is always down for repairs and maintenance as in other countries. More importantly, however, equipment at individual plants frequently is not fully utilized for extended periods because of bottlenecks in the pig iron and rolling and finishing stages.

The Product Mix

29. During the past decade, much Soviet investment has gone into expansion of the iron ore, pig iron, and crude steel production facilities. Rolling, finishing, and product improvement have been relatively neglected. In contrast, the US steel industry, with ample capacity and little pressure for expansion, directed more than half of a total investment of about $17 billion into the rolling and finishing sector and into product improvement. As a consequence, the United States has the finest rolling and finishing mills in the world.

30. Soviet steel products do not meet all the needs of the national economy for assortment and quality. Historically, the composition of output has been geared to the requirements of heavy industry. Hence, structural steel plate, heavy sheet, rails, bars, and castings dominate the product mix. In particular, the USSR maintains a high output of heavy steel castings in spite of a worldwide trend toward the use of more efficient rolled and welded products. Output of castings in the USSR is at least twice that of the United States.(10) The USSR also has failed to produce adequate amounts of high-quality electrical sheet needed for efficient power transformers.

31. Demand for light flat rolled steel and special surface finish has been rising in the USSR with the growth in the automotive, consumer durable, chemical, and petroleum industries. The response of the steel industry to this demand has been mixed. The output of flat rolled products during 1966-70 grew at a rate (about 6%) slightly higher than that of finished steel as a whole. However, the production of cold rolled sheet, especially cold rolled sheet with deep drawing qualities, tin plate, and galvanized sheet – all produced from flat rolled stock – has been lagging. Flat rolled steel constitutes less than 40% of the output of rolled products in the USSR, compared with more than 60% in the United States.

Consumption

32. Soviet consumption of steel in 1971 amounted to about 79 million tons, or about 84% of US consumption. Demand for steel in the USSR is unusually high compared with that in the United States in view of the fact that Soviet industrial output is only 60% to 65% of that of US output. High Soviet consumption is explained, in part, by the fact that in major uses, such as capital investment and defense, Soviet requirements are probably comparable to those in the United States. The area in which

10. Because of the excessive machining required, disproportionate use of castings has contributed to substantial waste (officially reported to have amounted to 7 million tons in 1971).

Soviet consumption markedly lags behind that of the United States is in automobiles and other consumer durables. Waste and inefficiency also contribute to high levels of steel consumption in the USSR as well as the relatively limited use of such substitutes for steel as aluminum, copper, and plastics. [redacted] in 1965 the USSR consumed 25% more steel per dollar's worth of machinery than did the United States. 25X1

Employment and Productivity

33. Employment in the Soviet steel industry is about 60% greater than in the US steel industry. Hence, labor productivity in the USSR is not much more than one-half that of the United States. Employment in Soviet ferrous metallurgy in 1970 is estimated at nearly 1.5 million, of which an estimated 1.1 million were employed in iron and steel plants.(11) Corresponding employment in the US steel industry was 690,000. In 1970 the Soviet steel industry required 18.1 man-hours to produce one ton of crude steel, compared with 10.2 man-hours by the US steel industry. For finished steel, the comparison of productivity is about the same: the Soviet steel industry required 25.5 man-hours to produce one ton of finished steel, whereas only 14.8 man-hours were required by the US steel industry.(12)

Costs

34. Direct statistical comparisons of steel industry costs of the USSR with those of the United States and other large steel-producing countries are not possible, because only limited information is available for the USSR. Evidence does exist, however, to indicate that Soviet costs are high relative to those in Japan and Western Europe and about equal to those in the United States. One advantage enjoyed by the Soviet steel industry is its low unit labor costs. Although Soviet labor productivity compares poorly with that of the United States and other major producers, as pointed out above, hourly wages and wage supplements in the USSR are considerably less than in the United States and even less than in Japan.(13) As a result,

11. The remaining workers are employed in the mining of iron, manganese, and chrome ores and in the production of ferroalloys, refractory materials, and industrial metal specialities. The US steel industry employs some workers in these activities, but the numbers are relatively small.

12. The Japanese steel industry, which employed 330,000 in 1970, required 8.1 man-hours to produce one ton of crude steel and only 9.9 man-hours to produce one ton of finished steel. The Japanese advantage over the US steel industry is overstated, however, because Japanese employment data exclude some operations included in US data, including mining, transportation, and warehousing of steel products.

13. In 1970, average hourly wages and other labor payments in the USSR, converted at the official exchange rate, amounted to about $1.15, compared with $1.81 in Japan and $6.30 in the United States. Measured in terms of purchasing power for consumer goods, and consumption in general, Soviet labor costs would be even less.

unit labor costs are considerably less than in the United States and probably roughly the same as in Japan. Nevertheless, this advantage is offset by other factors. [redacted] labor costs make up only a relatively small share of total costs, particularly compared to those incurred for raw materials. Major factors raising costs are the declining quality of iron ore and coking coal deposits, necessitating large expenditures for processing and upgrading of these materials; the development of new sources of raw materials located east of the Urals and in the Far North; and the transportation of raw materials over long distances and almost entirely by rail. Average hauls for coking coal and coke are about 500 miles and considerably longer for iron ore. Soviet capital costs also appear as high as in the United States and dramatically higher than those in Japan.

25X1

Trade

35. The USSR is a net exporter of steel while the United States is a net importer. Although Soviet exports are not large (7.5 million tons in 1970), they have grown steadily for more than ten years, and net exports reached 4.6 million tons in 1970. In the United States, steel imports quadrupled between 1960 and 1970 (see Table 4).

36. The USSR relies on imports to make up for deficiencies in domestic output of specialized finished steel products. A major import has been large-diameter pipe for petroleum pipelines. Other imports include cold rolled sheet for automobiles and consumer durables, precision tubing for the chemical and petroleum industries, oilfield pipe and casings, electrical sheet, and selected types of structurals and other shapes. The goals of the current plan call for greater emphasis on domestic output of cold rolled sheet, high-grade alloy, rolled steel, electrical sheet, and large-diameter pipes.

37. Most exports go to other Communist countries under a broad program of economic cooperation; nearly all the rest goes to less developed countries under bilateral trading arrangements. A small amount of steel, 260,000 tons in 1970, is shipped to the developed West. However, this is only about one-fifth of the quantity of highly processed products imported from the West. Relatively high cost of production and deficiencies in the assortment of finished steel make it unlikely that the USSR will become an important factor in Western steel markets in the next few years.

Prospects

38. Output of crude steel in the USSR almost certainly will continue a steady rise throughout the 1970s. Construction of substantial amounts of new capacity is planned for some existing plants, and large new steelmaking facilities, close to iron ore deposits, are planned near Kursk in the Western USSR and Korshunovsk in Eastern Siberia.

Table 4

USSR and US:
Trade in Rolled Steel

Million Metric Tons

	USSR			US		
Year	Exports	Imports	Net Exports	Exports	Imports	Net Imports
1960	3.0	1.5	1.5	2.7	3.0	0.3
1961	3.3	1.6	1.7	1.8	2.9	1.1
1962	3.9	2.0	1.9	1.8	3.7	1.9
1963	3.9	1.6	2.3	2.0	4.9	2.9
1964	4.5	1.2	3.3	3.1	5.8	2.7
1965	4.9	1.6	3.3	2.3	9.4	7.1
1966	5.4	1.2	4.2	1.6	9.8	8.2
1967	5.6	1.5	4.1	1.5	10.4	8.9
1968	5.9	2.2	3.7	2.0	16.3	14.3
1969	7.0	2.7	4.3	4.7	12.7	8.0
1970	7.5	2.9	4.6	6.4	12.1	5.7

39. Growth in future demand is assured by the growth of the motor vehicle industry, investment, output of consumer durables, and exports to the less developed countries and to Eastern Europe. The new steelmaking facilities planned for Kursk are to be partly financed by East European countries, and much of the output is intended for the East European market.

40. In addition to substantial quantitative increases in output, the USSR plans significant improvements in assortment and quality of steel during 1971-75. To achieve these goals, 17.5 billion rubles are planned for investment, a 72% increase over the actual investments during 1966-70. Most of the investment is to go into basic production facilities, but 15% (more than three times the level of 1966-70) is planned for special processing and finishing equipment to improve product technology.

41. Soviet plans for investment, production, and product improvement appear unrealistic. Since 1967 the Soviet steel industry has absorbed about 2.2 billion rubles a year. If the current investment plan is to be realized, outlays of 3.8 billion rubles a year are required during 1972-75. Production of metallurgical equipment does not appear to be expanding sufficiently to support such an ambitious investment program.

A massive import program – several hundred million dollars of equipment per year – could bring investment goals closer to fruition, but at a severe cost to other import plans. There is as yet no sign of such a plan. It is likely, therefore, that in 1975 both the quantity and quality of Soviet steel will fall short of planned goals.

42. Nevertheless, the output of crude steel in the USSR should increase by 5 million to 6 million tons a year and reach 140 million to 145 million tons in 1975, not far short of the goal of 146 million tons. In the United States the current resurgence of steel production could possibly push output in 1972 close to the peak year level of 128 million tons, making the US steel industry again the world's largest producer, but the outlook is still uncertain. Only if demand continues to grow strongly will US output exceed that of the USSR through the 1970s. By 1980 the output of crude steel in the USSR will probably be 165 million to 170 million tons. Unless rapid growth of domestic and export demand is resumed soon, Japan's steel production by 1975 probably will fall short of both US and Soviet levels of output. After 1975, however, Japan will probably become a leading contender for world leadership in steel production.